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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* PETER MARDILOVICH, GREGORY HEMAN,  
DAVID PUNSALAN and SAMSON BERHANE

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Appeal 2009-013104  
Application 10/618,049  
Technology Center 1700

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Before CHUNG K. PAK, MARK NAGUMO, and LINDA M. GAUDETTE,  
*Administrative Patent Judges.*

GAUDETTE, *Administrative Patent Judge.*

DECISION ON APPEAL<sup>1</sup>

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the “MAIL DATE” (paper delivery mode) or the “NOTIFICATION DATE” (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's decision<sup>2</sup> finally rejecting claims 1-12, 14, 15, and 18-20.<sup>3</sup> We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

Claims 1 and 18 are representative of the invention and are reproduced below from the Claims Appendix to the Appeal Brief:

1. A method of forming metal patterns on a substrate, comprising:
  - a) ink-jetting an electroless initiator as an electroless active layer over at least a portion of the substrate;
  - b) defining a pattern on the electroless active layer;
  - c) ink-jetting a metal composition on the pattern, said metal composition including a metal salt; and
  - d) ink-jetting a reducing agent composition, separate from the metal composition, on the pattern, said reducing agent composition including a reducing agent, wherein the reducing agent contacts the metal composition and reacts with the metal salt to form a reduced metal on the electroless active layer.

18. The method of claim 1, wherein the electroless initiator is ink-jetted in a non-continuous pattern.

Appellants request review of the following grounds of rejection (App. Br. 3-4):

1. Claims 1-4, 6-12, 14-15, 18, and 20 under 35 U.S.C. § 103(a) as unpatentable over Jacobson<sup>4</sup> in view of McCormack<sup>5</sup> (Ans.<sup>6</sup> 4-7);

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<sup>2</sup> Final Office Action ("Final") mailed Jul. 15, 2008.

<sup>3</sup> Appeal Brief ("App. Br.") filed Oct. 3, 2008.

<sup>4</sup> Joseph M. Jacobson, U.S. Patent 6,120,588 (2000).

<sup>5</sup> John F. McCormack et al., U.S. Patent 4,301,196 (1981).

<sup>6</sup> Examiner's Answer mailed Nov. 24, 2008.

2. Claim 5 under 35 U.S.C. § 103(a) as unpatentable over Jacobson in view of McCormack as applied to claims 1-4, 6-12, 14-15, 18, and 20, and further in view of JP '575 (Ans. 8);

3. Claim 19 under 35 U.S.C. § 103(a) as unpatentable over Jacobson in view of McCormack as applied to claims 1-4, 6-12, 14-15, 18 and 20, and further in view of Wells<sup>7</sup> (Ans. 9);

4. Claims 1-4, 6-12, 14-15, 18, and 20 under 35 U.S.C. § 103(a) as unpatentable over Jacobson in view of McCormack, and further in view of Morgan<sup>8</sup> (Ans. 10-13);

5. Claim 5 under 35 U.S.C. § 103(a) as unpatentable over Jacobson in view of McCormack and Morgan as applied to claims 1-4, 6-12, 14-15, 18, and 20, and further in view of JP '575 (Ans. 13-14); and

6. Claim 19 under 35 U.S.C. § 103(a) as unpatentable over Jacobson in view of McCormack and Morgan as applied to claims 1-4, 6-12, 14-15, 18, and 20, and further in view of Wells (Ans. 14-15).

In traversing the rejections of dependent claims 2-12, 14, 15, 19, and 20, Appellants rely on the arguments presented in support of patentability of independent claim 1. (*See* App. Br. 8-14 and 16-21.) Accordingly, these claims stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(vii). In addition to the arguments advanced by Appellants with respect to claim 1, we consider the separate arguments made in support of patentability of dependent claim 18. (*See* App. Br. 11-12 and 19-20.)

With respect to claim 1, Appellants' arguments raise the following issues for our consideration:

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<sup>7</sup> Johnny L. Wells, U.S. Patent 3,918,927 (1975).

<sup>8</sup> Albert W. Morgan et al., U.S. Patent 5,403,649 (1995).

Did the Examiner reversibly err in: (1) finding that one of ordinary skill in the art would have had a reasonable expectation of success in applying McCormack's electroless initiator by ink-jetting and (2) concluding that the ordinary artisan would have been motivated to use McCormack's electroless initiator in Jacobson's method?

The Examiner made the following enumerated findings, which are not disputed by Appellants (*see generally*, App. Br. 4-8 and 14-15; Rep. Br.<sup>9</sup> 2-5):

1. Jacobson teaches a method of forming metal patterns on a substrate as recited in appealed claim 1 with the exception that Jacobson does not teach an electroless active layer, or a step of applying the layer by ink-jetting an electroless initiator. (Ans. 5.)

2. McCormack teaches conventional electroless plating chemistry, including (1) the use of an initiator layer of electroless active material, (2) conventional reducing agents such as hydrazines, (3) specific substrate materials, such as ceramics, (8) specific materials desired to be plated, including palladium, (4) the conventional heating of the compositions during application to temperatures in the claimed range, (6) the conventional materials (palladium and tin) and application of the initiator layer and (7) the conventional deposition of the material to form circuit patterns.

(Ans. 6-7.)

3. McCormack further teaches that it is well known in the art that when various surfaces are to be electrolessly plated, such as non-metallic or inert metal, the substrate should first be pretreated with an electroless sensitizer (activator, initiator) to prepare the surface for electroless plating, i.e. providing an electroless active layer of initiator material (column 6, line 50 through column 7, line 10).

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<sup>9</sup> Reply Brief filed Jan. 15, 2009.

(Ans. 17.)

4. At the time of Appellants' invention, it was conventional in the art to use ink-jetting techniques to apply catalytic inks on a surface to form an initiator or active layer in preparation for electroless plating. (Ans. 12 (citing Morgan col. 1, ll. 15-45 (Background of the Invention)).)

Appellants contend the Examiner erred in finding that one of ordinary skill in the art would not have had a reasonable expectation of success in applying McCormack's electroless initiator by ink-jetting. According to Appellants, "[i]nk-jetting is a complex process involving many potential problems and variables." (Rep. Br. 4.) Appellant argues McCormack only discloses the application of plating compositions using "relatively simple and crude process[es]," which are not equivalent, or in any way related, to ink-jetting. (Rep. Br. 4-5; *see also*, App. Br. 6-8.)

"[W]hile an analysis of obviousness always depends on evidence that supports the required *Graham* factual findings, it also may include recourse to logic, judgment, and common sense available to the person of ordinary skill that do not necessarily require explication in any reference or expert opinion." *Perfect Web Technologies, Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1329 (Fed. Cir. 2009).

Although McCormack does not explicitly teach application of the disclosed electroless initiator by ink-jetting techniques, it is undisputed that at the time of the invention, it was conventional in the art to use ink-jetting techniques to apply electroless initiator compositions. (*See* Finding 4 *supra*.) Thus, the Examiner had sufficient basis to support a finding that one

of ordinary skill in the art would have had a reasonable expectation of success in applying McCormack's electroless initiator by ink-jetting.

Appellants' arguments lack evidentiary support and, therefore, fail to persuade us of error on the part of the Examiner. In this regard, we note that Appellants have not identified any disclosure in McCormack which discourages the use of ink-jetting or techniques other than bath plating technology. (See e.g., App. Br. para. bridging 6-7; Rep. Br. 4; cf. Ans. 17 ("McCormack specifically does not limit the electroless plating of the solution materials to immersion.")) Nor have Appellants produced evidence demonstrating that persons having ordinary skill in the art would have doubted McCormack's electroless initiator could have been applied by an ink-jetting technique.

Appellants also argue the Examiner erred in concluding that the ordinary artisan would have been motivated to use McCormack's initiator in Jacobson's method. More specifically, Appellants contend the Examiner's obviousness determination is based on an overbroad reading of "Jacobson as disclosing that all formulations used in printing circuit boards could be applied by ink-jetting." (Rep. Br. 2; see also, App. Br. 6 (referencing Jacobson, col. 10, ll. 3-4 ("Many other examples of chemistries suitable for the present system are known in the art of electroless plating."))). Appellants argue there is no indication in Jacobson that electroless initiators could be used in the disclosed method of inkjet electroless plating. (App. Br. 6.)

The test for obviousness is what the collective teachings of the prior art would have suggested to one of ordinary skill in the art. *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991). When a second reference identifies the

benefits of adding a feature to the primary reference, an obviousness rejection is proper. *In re Thrift*, 298 F.3d 1357, 1365 (Fed. Cir. 2002).

The Examiner's proposed motivation for modifying Jacobson to include a step of applying an electroless initiator by ink-jetting is not based solely on above-quoted disclosure in Jacobson (i.e., col. 10, ll. 3-4). Rather, it is clear the Examiner relied on the combined teachings of Jacobson and McCormack. (*See* Ans. 16-17 ("[T]he combination of [Jacobson and McCormack] provides the suggestion.")) The Examiner found that McCormack teaches certain substrate materials, e.g. non-metallic or inert metal, should be pretreated with an electroless initiator to provide an electroless active layer of initiator material. (*See* Finding 3 *supra* p. 4.) Based on this teaching, as well as the Examiner's findings with respect to Jacobson's disclosure (*see e.g.* Finding 1 *supra* p. 4 and Ans. 17 ("Jacobson . . . at the least suggest[s] to look at plating chemistries such as those described in McCormack, which is specifically an example of electroless plating chemistry in the art.")), the Examiner concluded that one of ordinary skill in the art would have been motivated to include a step of pretreating Jacobson's surface with an electroless initiator solution as described by McCormack to allow plating on a variety of substrates. (Ans. 17.)

Appellants have not fully addressed the aforementioned facts and reasons relied on by the Examiner. Therefore, Appellants have not persuaded us of reversible error in the Examiner's obviousness determination as to claim 1.

Turning now to claim 18, Appellants argue the Examiner's rejections are based on an unsupported, "conclusory statements regarding a non-continuous pattern." (App. Br. 11-12 and 19-20.) We have reviewed the facts and reasons relied on by the Examiner in rejecting claim 18 (Ans. 7,



13, and 21) and find they are reasonable based on the relied-upon disclosures in Jacobson and McCormack. Accordingly, Appellants' general assertion that the Examiner's rejection of claim 18 is based on unsupported conclusions fails to persuade of reversible error.

In sum, we are not convinced of error in the Examiner's determination that argued claims 1 and 18 are unpatentable under 35 U.S.C. § 103(a) over Jacobson in view of McCormack. We find that Morgan merely evidences the state of the art at the time of Appellants' invention (*see* Finding 4 *supra* p. 5) and is unnecessary to support the Examiner's rejections of the appealed claims under 35 U.S.C. § 103(a). *Cf. In re Baxter Travenol Labs.*, 952 F.2d 388, 390 (Fed. Cir. 1991) (noting that references not included in the statement of a rejection may be cited to explain an element in the prior art, as long as they are not used to expand on the teachings of the relied-upon prior art references). Therefore, we affirm all six grounds of rejection.

The Examiner's decision to rejection claims 1-12, 14, 15, and 18-20 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1).

**AFFIRMED**

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